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OBSERVATIONS FOR VARIATION OF COMPASS.

Leydenberg, 24° W.

Trigardt's Farm.

July 12. Mean of 3 observations .. N. 43° 30′ East.
Result deduced .. 20° W. nearly.

On Sorghobiti River. Lat. 23° S., Long. 33° E.

July 20, 1868.—Observed amplitude. Rising E. 1° N.
„ Setting W. 45° 5 N.
Result deduced .. 22° 2′ W.

Confluence of the Limpopo and Lipalule.

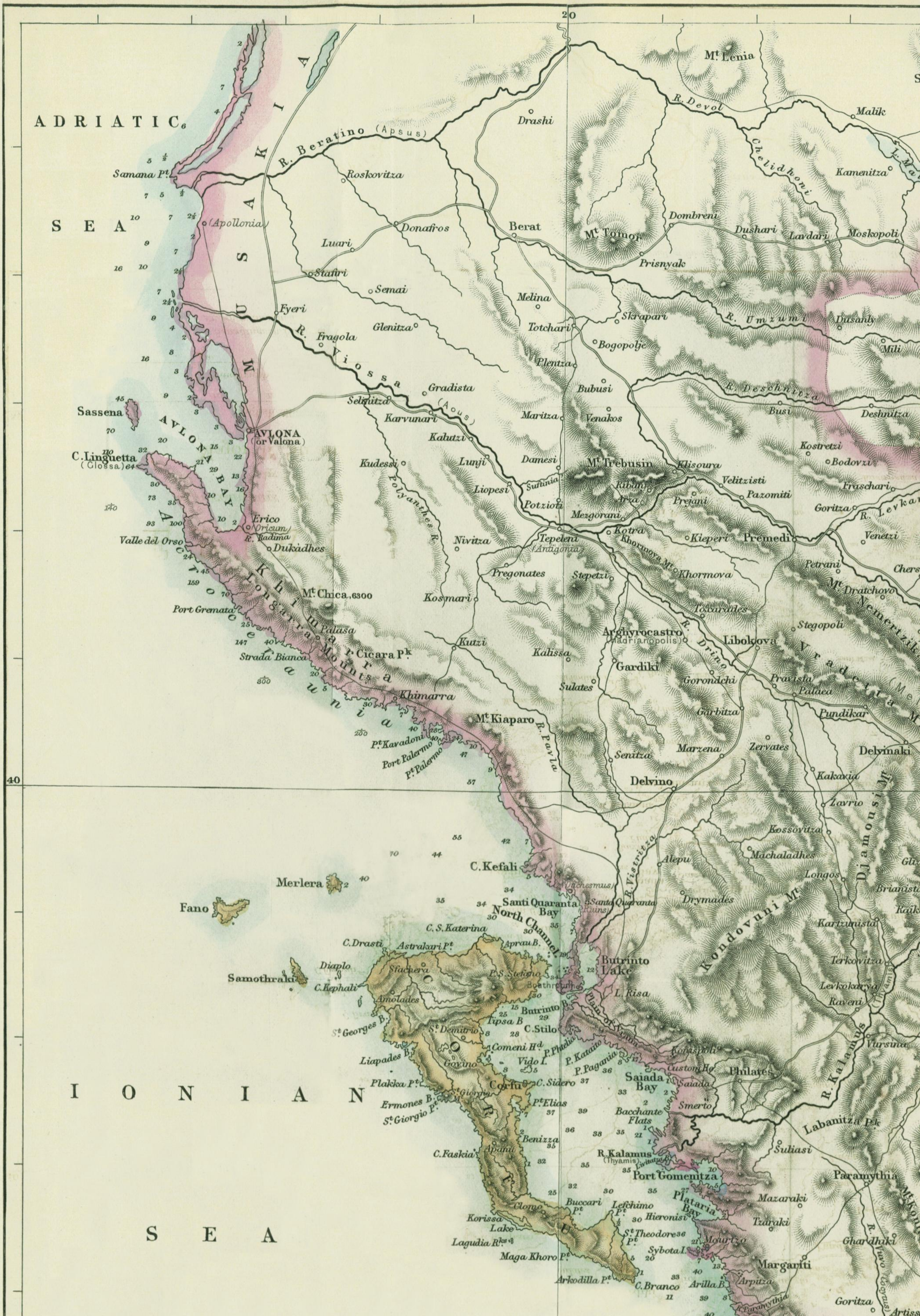
July 30, 1868.—Amplitude at setting W. 43° N.
July 31, 1868.—Amplitude at rising, N. 91° 30′ E.
Result deduced .. 22° W.

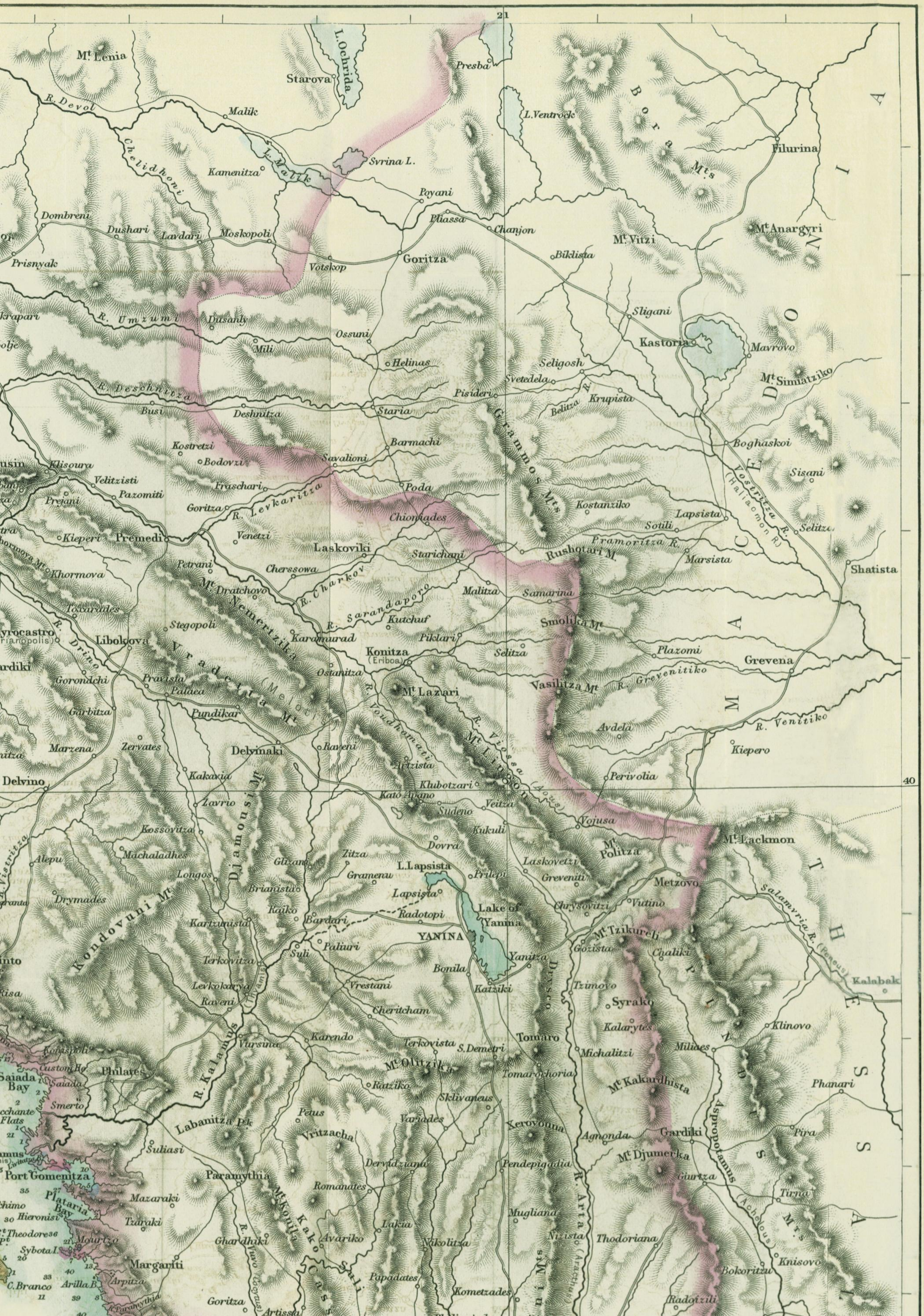
Umhamba's Kraal on Bembe River.

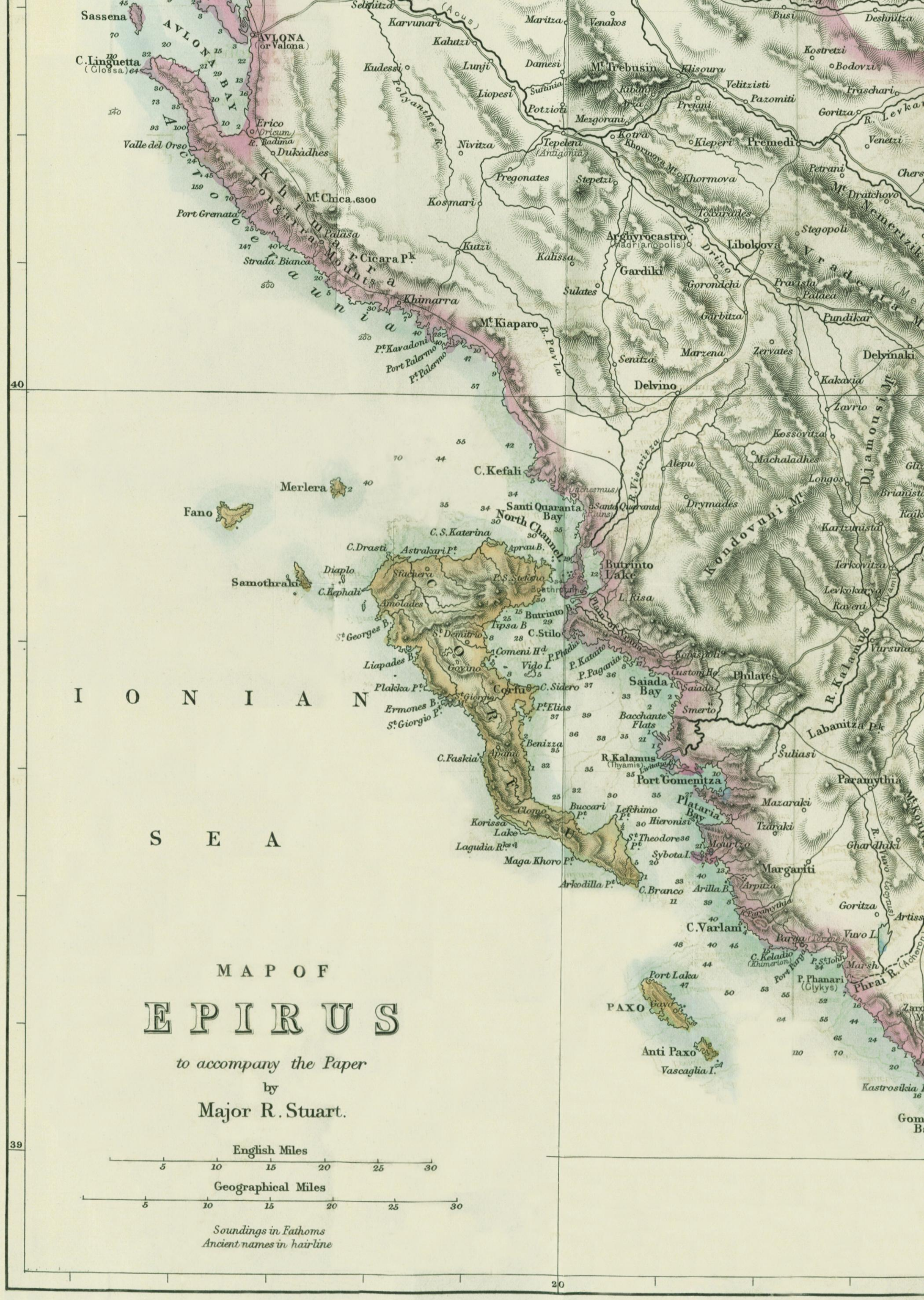
Aug. 12, 1868.—$8^{\mathrm{h.}}$ 20′ A.M., Mean of 3 altitudes of Sun, 30° 13′ 32″
Compass bearing, N. 74° 30′ E.
Instrument, Troughton's pocket prismatic compass.

XII.—*On the Physical Geography and Natural Resources of Epirus.* By MAJOR R. STUART, H.M. Consul at Yanina.

THE province of Epirus is situated on that part of the Eastern shore of the Adriatic where the coast line, deflecting from the general direction of the land, approaches to within 44 statute miles of the back of the heel of Italy, with which it forms the gates, as it were, of the Adriatic. It lies between 38° 56′ and 41° 6′ N. latitude, and 19° 16′ and 21° 35′ E. longitude, being 158 miles long from N.W. to S.E.; its greatest breadth is 65 miles, its least about 50, and its superficial area may be stated at about 8000 square miles. It is bounded on the N. by North Albania, on the E. by Macedonia and a part of Mount Pindus, on the S. by the Gulf of Arta and Greece, and on the W. by the Adriatic and the Canal of Corfu. It has a coast line, including bends and irregularities, of 370 miles, viz., 320 on the seaboard, and 50 on the Gulfs of Prevesa and Arta. From the northern extremity, for a direct distance of about 40 miles, the shore is flat and marshy, with extensive salines; and for about 15 miles the land at the southern end is low and shelving; the intermediate part presents a bold and inhospitable coast, formed chiefly by the abrupt flank of the lowest fall of Mount Pindus, pierced, however, by several bays, which


20
40
ADRIATIC
SEA
IONIAN
SEA
MUSAKIA
R. Beratino (Apsus)
Samana Pt.
(Apollonia)
Roskovitza
Donafros
Luari
Stafiri
Semai
Fyeri
R. Viossa (Aous)
Fragola
Glenitza
Gradista
Selnitza
Karvunari
Kalutzi
Drashi
Berat
Melina
Totchari
Plentza
Bubusi
Maritza
Venakos
Damesi
Lunji
Liopesi
Sufinia
Potzioti
Mt. Trebusin
Klisoura
Ribinji
Arza
Mezgorani
Tepeleni (Antigonia)
Kotra
Khormova Mt.
Khormova
Kieperi
Premedi
Stepetzi
Pregonates
Nivitza
Kosmari
Kudessi
Polyanthes R.
Kutzi
Kalissa
Sulates
Arghyrocastro (Hadrianopolis)
Gardiki
R. Drino
Toxarades
Libokova
Gorondchi
Garbitza
Senitza
Marzena
Delvino
R. Pavla
Mt. Lenia
R. Devol
Chelidhoni
Malik
Kamenitza
Dombreni
Mt. Tomor
Prisnyak
Dushari
Lavdari
Moskopoli
Skrapari
Bogopolje
R. Umzumi
Dusanly
Mili
R. Deschnitza
Busi
Deshnitza
Kostretzi
Bodovzi
Velitzisti
Pazomiti
Prejani
Fraschari
Goritza
R. Levkar
Venetzi
Petrani
Chers
Mt. Dratchovo
Nemertzik
Stegopoli
Vradetta
Pravista
Palaea
Pundikar
Zervates
Delvinaki
Kakavia
Zavrio
Kossovitza
Machaladhes
Longos
Djamousi Mt.
Brianist
Kartzunista
Terkovitza
Levkokarya
Raveni
Vursina
Kondovuni Mt.
Drymades
Alepu
R. Vistritza
Sassena
C. Linguetta (Glossa)
AVLONA (or Valona)
AVLONA BAY
Erico (Oricum)
R. Radima
Dukadhes
Valle del Orso
Acroceraunia
Khimarra
Longarra Mounts
Mt. Chica 6300
Port Gremata
Palasa
Cicara Pk.
Strada Bianca
Khimarra
Mt. Kiaparo
Pt. Kavadoni
Port Palermo
Pt. Palermo
C. Kefali
Merlera
Fano
Santi Quaranta Bay
(Onchesmus)
Santi Quaranta Ruins
North Channel
C. S. Katerina
C. Drasti
Astrakari Pt.
Aprau B.
Diaplo
Samothraki
C. Kephali
Stachera
P. S. Stefano
Butrinto Lake
Boathrotum
L. Risa
Plain of Vurgo
Amolades
Butrinto B.
Tipsa B.
C. Stilo
St. Georges B.
St. Demitrio
Comeni Hd.
Liapades B.
Govino
P. Phtelia
Vido I.
P. Katatto
P. Pagania
Konispoli
Custom Ho.
Philates
Plakka Pt.
Corfu
C. Sidero
Saiada Bay
Saiada
Ermones B.
St. Giorgio
Pt. Elias
St. Giorgio Pt.
Bacchante Flats
Smerto
R. Kalamas
Labanitza Pk.
Benizza
CORFU
Apano
C. Faskia
R. Kalamus (Thyamis)
Lavitzo
Port Gomenitza
Suliasi
Paramythia
Mazaraki
Platarias Bay
Buccari Pt.
Lefchimo
Hieronisi
Tzaraki
Korissa Lake
Clomo
Lagudia Rks.
St. Theodore Pt.
Sybota I.
Mourtzo
Margariti
Ghardhiki
R. Vuvo
Maga Khoro Pt.
Arkodilla Pt.
C. Branco
Arilla B.
Arpitza
Paramythia
Goritza
Artisa


21
40
L. Ochrida
Mt. Lenia
Starova
Presba
R. Devol
Malik
L. Ventrock
Bora Mts
Filurina
Chelidhoni
L. Malik
Svrina L.
Kamenitza
Poyani
Dombreni
Dushari
Lavdari
Moskopoli
Pliassa
Chanjon
Mt. Vitzi
Mt. Anargyri
Prisnyak
Votskop
Goritza
Biklista
Krapari
R. Umzumi
Ditsanly
Sligani
Kastoria
Mavrovo
Mili
Ossuni
Helinas
Seligosh
Mt. Simiatziko
Svetedela
R. Deschnitza
Pisideri
Belitza R.
Krupista
Busi
Deshnitza
Staria
Grammos Mts
Barmachi
Boghaskoi
Kostretzi
Bodovzi
Savalioni
Vostritza R.
(Haliacmon R.)
Sisani
Klisoura
Velitzisti
Fraschari
Poda
Pazomiti
Prejani
Goritza
R. Levkaritza
Kostanziko
Chioniades
Lapsista
Sotili
Selitza
Kiepert
Premedi
Venetzi
Pramoritza R.
Laskoviki
Starichani
Rushotari M.
Marsista
Shatista
Bornova Mt.
Khormova
Petrani
Mt. Dratchovo
Cherssowa
R. Charkov
Malitza
Samarina
Toxarades
Nemertzika
R. Sarandaporo
Stegopoli
Kutchuf
Smolika Mt.
MACEDONIA
Argyrocastro
(Hadrianopolis)
R. Drino
Libokova
Karamurad
Konitza
(Eriboa)
Piklari
Selitza
Plazomi
Grevena
Ostanitza
Dardiki
Gorondchi
Vradetzia Mt.
(Meliti)
Mt. Lazari
R. Voudhomati
Vasilitza Mt.
R. Grevenitiko
Pravista
Palaea
Garbitza
Pundikar
R. Viossa
(Aous)
Mt. Linkon
Avdela
R. Venitiko
Marzena
Zervates
Raveni
Kiepero
Delvinaki
Artzista
Perivolia
Delvino
Kakaria
Klubotzari
Kato Avano
Zavrio
Sudeno
Veitza
Vojusa
Djamousi Mt.
Kossovitza
Kukuli
Mt. Politza
Mt. Lackmon
R. Vistritza
Alepu
Dovra
Machaladhes
Glizani
Zitza
L. Lapsista
Laskovetzi
Greveniti
Longos
Gramenu
Prilepi
Metzovo
Brianista
Lapsista
Drymades
Chrysovitzi
Vutino
Salamvria R. (Peneus)
Raiko
Radotopi
Lake of Yanina
Kondovuni Mt.
Kartzunista
Bardari
YANINA
Mt. Tzikureli
Paliuri
Gozista
THESSALIA
Suli
Chaliki
Terkovitza
Yanitza
Kalabak
Bonila
Drysco
Levkokarya
(Thyamis)
Vrestani
Katziki
Tzimovo
Syrako
Raveni
Cheritcham
Kalarytes
Klinovo
R. Kalamas
Karendo
Tomaro
Vursina
Terkovista
S. Demetri
Michalitzi
Miliaes
Konispoli
Custom Ho.
Mt. Olitzika
Tomarochoria
Saiada Bay
Philates
Saiada
Ratziko
Mt. Kakardhista
Phanari
Smerto
Bacchante Flats
Sklivaneus
Labanitza Pk.
Petus
Variades
Xerovouna
Vritzacha
Agnonda
Gardiki
Pira
Sufiasi
Dervidziana
Pendepigadia
Mt. Djumerka
Port Gomenitza
R. Arta
Aspropotamus
Paramythia
Giurtza
Romanates
Platarias Bay
Mt. Kourila
Tirna
Mazaraki
Kakos
Mugliana
(Achelous)
Hieronisi
Tzaraki
R. Vuro
Lakia
Nizista
(Arachthus)
Thodoriana
Ghardhiki
Avariko
Mts
St. Theodore
Sybota I.
Mourtzo
Margariti
Nikolitza
Knisovo
Arpitza
Papadates
Bokoritzu
C. Branco
Arilla B.
(Cocytus)
Kometzades
Radotzili
Goritza
Artissa
Paramythia
Cass
Suli



MAP OF

EPIRUS

to accompany the Paper

by

Major R. Stuart.

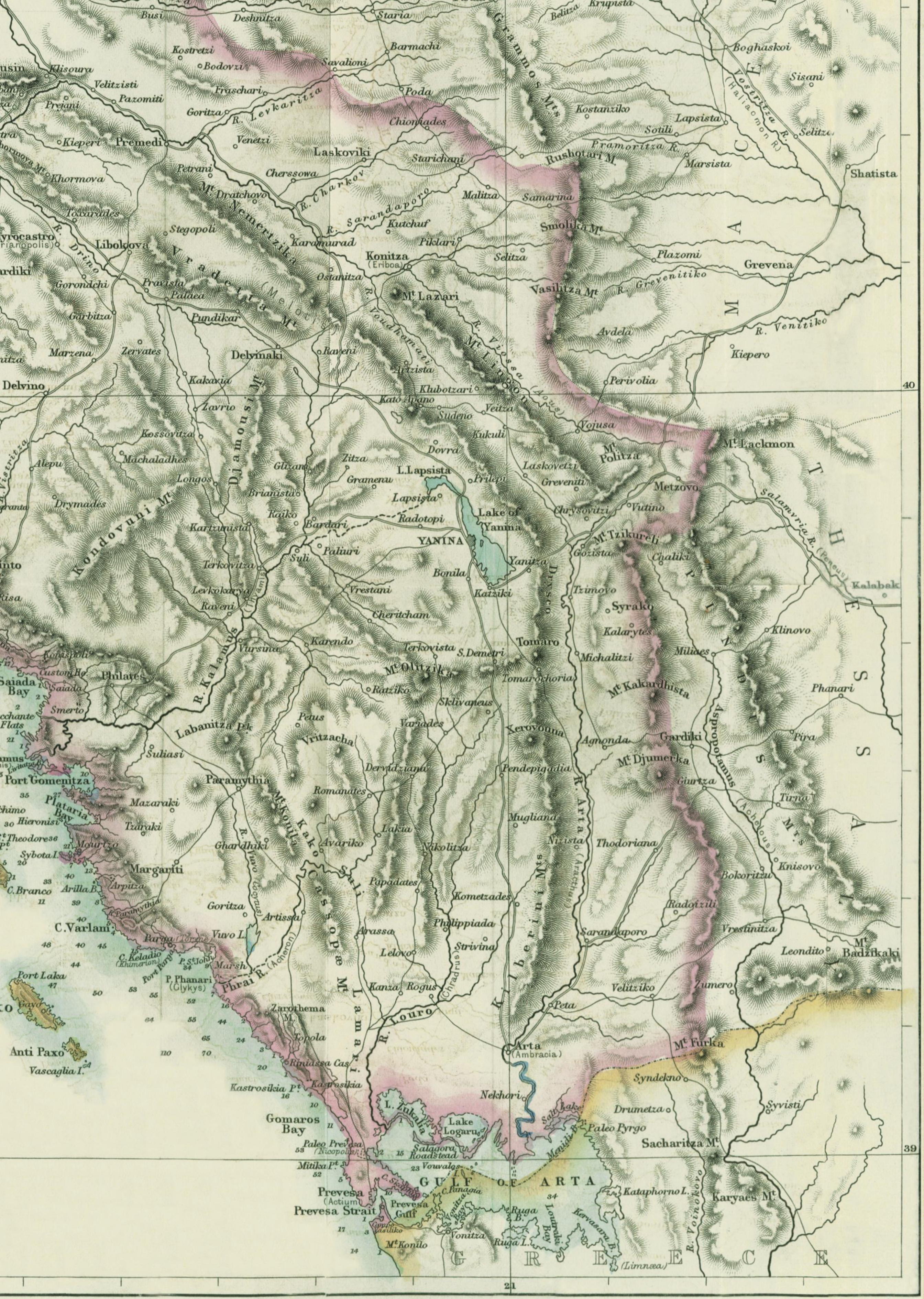
English Miles

Geographical Miles

Soundings in Fathoms

Ancient names in hairline

Published for the Journal of the Royal Geographical Society by J. Murray, Albemar



Journal of the Royal Geographical Society by J. Murray, Albemarle Street, London 1869.

Edwd Welle

penetrate either into the openings of transverse valleys or between the extremities of inosculating heights.

THE COAST.

On the north the first harbour is the Bay of Avlona, or, according to the Italians, Valona, a name which may, I think, be derived from the ancient City of Apollonia, which was situated about 15 miles to the north, a short distance from the right bank of the Viossa. The Bay of Avlona is about 10 miles long and 4 in average breadth; it opens to the N.W.; and the rocky Islet of Sasseno, 3 miles long, a mile broad, and 1000 feet high, forms a partial breakwater, with a navigable channel and deep water at either end. Within the bay the soundings vary from 10 to 30 fathoms, and the bottom is everywhere composed of a tenacious mud, the detritus from the surrounding mountains. The bay is separated from the Adriatic by a rocky promontory, which forms the extremity of the Acroceraunian range, and terminates in a point 2290 feet high. This point is marked on some charts and maps as Cape Linguetta, the Italian of its ancient name of Glossa, by which locally it is still better known.

The present port-town bears the name of the bay, Avlona. It is situated 1½ mile inland, at the base of an amphitheatre of clustering heights. The ancient port-town was Oricum, at the bottom of the bay, where some scattered ruins, called Erico, still attest its site and name.

From Cape Linguetta, or Glossa, to Point Palermo, a direct distance of 39⅓ miles, there is a line of coast which has ever been dreaded as a lee-shore. The term "infames scopuli," applied to it by Horace, is no libel. It is the sea front of the Acroceraunian cluster, which, rising in serrated heights, culminates in Mount Chica, 6300 feet high. The coast range, which is the continuation of Cape Linguetta, is called Longarra; and between it and Mount Chica is a valley, which towards the S., where it gradually narrows, has been filled up by mountain detritus and débris. This part is called "Khimarra," the Greek for "winter torrent," a name which has been aptly given to a district deeply grooved with eroded gorges, through which the collected rains of the mountain are wont to rush with impetuous violence to the sea.

Ascending from the valley between the ranges of Longarra and Chika, one enters Khimarra by a narrow plateau called "Kiafé" (head) which overlooks the sea, and being exposed to the north, south, and west winds, is always approached with apprehension, for sudden squalls in all seasons sweep over it with a force which neither man nor horse can withstand. Here also electric clouds are frequently arrested in their course, and discharge their contents with an effect which shows that the name of Acroceraunia ("thunderbolt-point") is no poetic fancy. I was near the spot when an electric storm broke over it; and never before did I hear discharges so loud, or see such vivid flashes. The thunder seemed to fill the atmosphere, the lightning to illuminate it; I felt as if I were in the midst of the noise and of the blaze, which stunned my ears and dazzled my eyes. The inhabitants dread these storms, which are often destructive to life and property. As a provision in some degree against them, and at the same time against earthquakes, they build their houses and premises in dry masonry, so that the walls, which must be solid to resist the winds, may, if struck, be but partially damaged, and, if shaken, may in some measure yield to the oscillation. It is for this latter reason that horizontal binders (as they are called) of wood, are generally inserted between the courses of mortar masonry in this country, at intervals of 2 or 3 feet. They diminish the rigidity of the building, and the pliancy thus imparted to it is some security against the effects of earthquakes.

Of the minor indentations which break this line of coast, Palasa alone deserves mention, and this from the fact that it was here that Cæsar landed the forces with which he proceeded against Pompey in Illyria, and subsequently defeated him at Pharsala.

Port Palermo is the only port deserving the name on the Acroceraunian coast. It is 1½ mile long by ¾ mile broad, and has deep water in-shore. The soundings vary from 10 to 40 fathoms, with a mud bottom. It is open to the S.W., with an entrance ¾ mile wide. Between the flanking promontories, named respectively Kavadoní on the north, and Palermo on the south, a little rocky projection within the port forms a natural mole and partial breakwater; under its lee there is secure anchorage in all weathers.

Khimarra has seldom been visited by travellers, and the published descriptions of it have for the most part been taken from its sea aspect, which is stern and forbidding. Such, however, is not the character of this strip of country; it is, on the contrary, fertile, highly cultivated and well peopled. The soil consists of limestone detritus washed down from the impending heights, and eminently suits the olive and the vine, produces abundant crops of rye and barley, and affords excellent pasture for sheep and cattle. The district contains 12 villages, or rather small towns, of which Khimarra is the chief; they all present an air of comfort and prosperity, and the inhabitants are as a rule hale, handsome, and well-grown. Owing to certain prescriptive immunities, the Khimarriotes are but little interfered with by the Imperial Government; each village has consequently become the centre of a little quasi-independent republic, and as the people are all of naturally enterprising habits, their name is known along the shores of the Adriatic in creditable connection with industry and commerce. Their commercial intercourse with other countries, combined with home education, has produced an effect on their social and intellectual character strongly contrasting with their local isolation.

The Longarra range terminates at Point Palermo, thence to Cape Kefāli, 8 miles, a low coast extends to the foot of the inner range, and through its shingly edge several rivulets force their way into the sea. From Cape Kefāli to Santi Quaranta Bay there are 5 miles of mountain headland, which, parallel to the opposite coast of Corfu, forms with it the N. channel, here 6 miles wide, but narrowing farther in to 1½ mile, the nearest approach of the island to the mainland. That union once existed between these parts, may, I think, be surmised from the conformation of the land on both sides of the Channel, and from the identity of the mountain strikes; the fractured ridges, if produced, would meet, and geologically they are of uniform character.

Entering the N. channel, the first place for shipping on the mainland is the bay of Santi Quaranta, so called from a monastery which was dedicated to some company of forty martyrs, who have been canonised by the Eastern Church. The monastery stood on a neighbouring height; but nothing of it now remains but the chapel, which is in ruins.

The bay is exposed to the west wind, and in part to the north-west, and the shore shelves rapidly into deep water; but though at times unsafe, the bay is much frequented by coasting craft, as being the only outlet for the fertile district of Delvino, and even of Arghyrocastro, which is 10 miles farther inland. A few humble buildings now serve for the commercial and other requirements of Santi Quaranta; but it is not from its present condition that the place derives its interest; a comparison of historic notices and the silent testimony of ruins assign to it a long-sustained importance in past ages, identifying it as the site of the ancient city of Onchesmus, which was the point of departure from Epirus to Italy, and which even gave its name to the south-east wind, which was favourable to the passage. Of this ancient city there are no visible remains; it was, no doubt, included in the general destruction which the Romans inflicted on Epirus; and the materials as well as the site were used in the construction of a Byzantine city, the ruins of which still mark the spot. Onchesmus is a Greek word, which signifies, with other meanings, "sailing;" but the Byzantine city was called Anchiasmus, either in ignorance of the etymology of the old name, or from an affected veneration for a mythic story which connected the spot with the name of Anchises. When this city was built is unknown; it was a bishopric in the fifth century, and is supposed to have been destroyed by the Goths in 552.

From Santi Quaranta to Butrinto Bay the direct distance is about 8 miles, and the intervening coast is rugged and precipitous. Butrinto Bay is muddy, and is shallow in-shore from the deposit of the river of the same name; which deposit is gradually forming marshy land, and has already converted into a lagoon what was anciently a rock-girt harbour on the right of the river and close to its mouth.

The drainage of the plain of Delvino, collected into a deep hollow between the maritime and an inner range, forms the Lake of Butrinto, which is 4 miles long, 1½ mile in average width, and 12 fathoms in the deepest part. Its waters are discharged through a natural canal, the Butrinto River just mentioned, which is 2½ miles long, from 40 to 50 feet wide, and from 12 to 18 feet deep; there is a bar at its mouth which renders it difficult of entrance; the current is sluggish, and even sets inward at times whenever the level of the lake has been unusually depressed by a N. or N.E. wind.

On a rocky promontory at the S.W. corner of the lake where the waters enter the river, are the ruins of the ancient city of Bouthrotum; they are contained within an inclosure of about a mile in circumference, and are a mixture of Pelasgic, Hellenic, Roman, Gothic, and Venetian work, with remnants of Pagan temples and Christian churches. Proof is thus given of the high estimation in which this position was held through a long series of ages, and by the different races that successively held the coast. A brief description of the place will account for the value attached to it. The ancient name (from Βοῦςθρώτνω) plainly refers to the exportation of cattle, and shows that the animals had to *leap* as they still do into the boats of shallow draft that conveyed them over the bar. The fertile plain of Vrana, extending 5 miles to the S.E., was the pasture ground of these cattle. It is peculiarly adapted to this use, as is shown by the fact that during the British protectorate of the Ionian States, it was always rented as grazing ground by the Commissariat contractor. This plain is watered by a mountain stream which in mid-course separates into two channels, one of which leads to the bay, the other to the Lake of Butrinto, before entering which its volume of water is increased by the discharge of Lake Risa; this lake is a mile and a half long by half a mile wide, and is half a mile S.E. from Lake Butrinto; it takes its name from the rice which grows on its marshy borders; this rice, I may add, is of a coarse grain and reddish colour, similar to the cargo rice of Bengal.

The Lake of Butrinto from the frequent infusion of sea-water, as already noticed, is sufficiently saline for grey mullet; and teeming with this and other fish, it was called by the Venetians Vivari, locally corrupted into Sivari. The fish of brackish waters are generally of inferior quality: the grey mullet is an exception; and as this fish is in constant demand, its abundance in the Sivari used to confer no small value on those waters. The roe when pickled, smoke-dried, and coated with melted wax, becomes the Botarghi of Mediterranean commerce; the word botarghi is a corruption of the Greek *ὠὰ τάριχα*, "pickled eggs."

In addition to these resources of land and water, the mountains above Butrinto were covered with forests which furnished prime timber for building and naval purposes together with abundance of firewood; these forests were, as still, peopled with wild pigs, wolves, foxes, and jackals, while the adjacent plains and waters abounded with small and feathered game.

Such, in part at least, were the natural resources which, combined with position, invested Butrinto in former times with importance. But while the liberality of Nature is undiminished the aspect of the place is totally changed; the strong post and the large city are solitary ruins; the pastures are almost deserted, and fever and ague await the sportsman who would visit the place, allured by the teeming game.

It may interest the antiquary to know that in recent times no systematic researches have been made amongst the ruins of Butrinto; the same observation may, indeed, be extended to most of the ancient cities whose ruins dot the face of Epirus.

From Butrinto seven miles of rockbound coast extend to Cape Stilo, which is the extremity of a counterfort of the maritime range; and from Cape Stilo to Saïada an equal distance of similar coast, which is pierced first by the small harbour of Phtelia, next by the open port of Kataïto, and thirdly by the harbour of Pagania. The bay of Saïada is shallow, with a shelving gravelly shore of about 6 miles in circuit; it has a skala and a custom-house, and is the chief point of communication between Corfu and Janina. Fetid marshes line the shore; but further in, between the spurs of the receding mountains, there is a wide surface of fine alluvial land formed by the Kalamus (ancient Thyamis) which here falls into the sea. The bay derives its name from the village of Saïada which crowns a neighbouring height, and which in the middle ages was an important fortified town. Saïada is a corruption from the Greek *Sybota*, hog-feeding; but this place must not be confounded with the islets of the same name in the south channel, which sheltered the Corfiote fleet on the eve of its engagement with that of the Corinthians B.C. 432.

The Kalamus, 12 miles before reaching the sea, parts into two channels: the northern is evidently of recent formation; through it the river now discharges the chief part of its waters, which are forming a delta known by the name of the Bacchante flats. The old or southern branch has already formed a delta of considerable extent, and is gradually filling up the once capacious port of Livitatza.

Beyond Livitatza, and separated from it by a rocky point of the same name, is the bay of Gomenitza, a fine natural basin, 2 miles wide, nearly 3 long, and with 14 fathoms of water in the middle. The entrance, however, is crossed by a bar, projected from the alluvium of the Kalamus, on which there is only 2¼ fathoms. The name Gomenitza is the Italian word *Gomena*, a cable, with a Slavonic termination.

A high mountain spur separates the bay of Gomenitza from that of Plataria, which is 3 miles in length, 2½ wide at the entrance, narrowing to ¾ mile at the bottom, and with deep water throughout. Rounding the island point Hieronisi, we next come to the small inlet of Mourtzo and to the rocky islets of Sybota, already mentioned, which Thucydides has rendered memorable in connection with the prelude of a war which ruined Greece and opened a new chapter in the history of the world. At the nearest point these islets are only 4½ miles from Corfu. Hence there is 18 miles of rock-bound coast, which continues to protrude till it reaches Cape Varlam midway, and thence recedes to Cape Keladio, which shelters the port of Parga from the west winds. Here the coast, striking due east 4 miles, and then due south to Port Phanari about 2½ miles, presents to us scenes and places famed in mythology, history, and song; for Cape Keladion is the Khimerion of the Odyssey and Thucydides; and the united waters of the Acheron and the Cocytus, now the Phraï and the Vuvo, fall into Port. Phanari, Parga being the Toryné of antiquity.

In the angle of the coast is the deep but unfrequented port of St. John; the ancient name of Port Phanari was Glykys, from the quantity of fresh water it received from the rivers of fable just mentioned; and from this port to the Straits of Prevesa, the coast presents no feature deserving special notice. For 11½ miles, as far as Point Kastrosikia, it is high and rugged; thence to Mitika Point the Bay of Gomaros slightly invades the subsiding land; and from Mitika there is a line of red cliff from 6 to

10 feet high to the point of the peninsula, 4 miles, and round to Prevesa.

Prevesa Strait is the entrance to the Gulf of Arta; it is 1¼ mile wide at the outer end, narrows to ⅓ mile in front of the town of Prevesa, thence with a slight expansion it bends ½ mile further N. into the Gulf. In the narrow the soundings vary from 40 to 80 feet; but a mile farther out there is such an accumulation of sand and gravel, that with difficulty a channel with 13 feet of water has been buoyed off. Such is the present entrance to the Gulf; but I think there are grounds for assuming that the low tongue of land on which stood the ancient Actium is an alluvial formation, and that the basin, variously called the Procolpo and the Gulf of Prevesa, was once open to the sea, which, unobstructed between Prevesa Point and Mount Konilo in Acamania, met the issuing waters of the Gulf where Capes Skafidaki and Panagia approach within a distance of 1½ mile. There is an outward current by the south and an inward, which is less perceptible, by the north.

Here all is classic; the battle of Actium was fought in the Procolpo; and the name of Royal Plain (*Campo Vasiliko*) still clings to the tongue of land just noticed, on which Antony encamped while awaiting the approach of his rival. The south and east shores of the Gulf of Arta abound in vestiges of antiquity; but they belong to Greece, and can therefore have no place in this paper. The boundary line, beginning from the N.E. angle of the Gulf, rather inclines to the north shore, passes midway between Capes Skafidaki and Panagia, divides the Procolpo equally and cuts off 2½ miles of the Campo Vasiliko, thus securing to Turkey the exclusive command of the entrance to these beautiful waters. The north shore is 16½ miles in direct length; it is low and marshy, of irregular contour, skirted in half its length with sandbanks inclosing deep lagoons, which decayed vegetation and the detritus of the Plain of Arta are slowly converting into land. There is no port on the north side, and the only place of approach for shipping is the Roadstead of Salagora which is 5 miles nearly due north from the Strait of Skafidaki. Along the north coast the water is shallow, but everywhere else in the Gulf it is deep, the soundings varying from 10 to 35 fathoms, with a bottom of tenacious mud, which affords good anchorage. A view of this fine basin cannot fail to suggest the idea of a naval and commercial station of the first order: it was such in antiquity, and its natural conditions are the same as ever; its central position, its teeming fisheries, extensive salines, the Plain of Arta, the encircling mountains clothed with forests, these and many other advantages are so many appeals to human industry and enterprise; it is not in the nature of things that such appeals should be for ever unheeded.

MOUNTAINS.

Epirus is essentially a country of mountains; it is a dependency of Mount Pindus, and more immediately of that part of it which lies between the Peak of Lakmon in N. lat. 39° 57 and its articulation with Mount Othrys in lat. 39°. No accurate survey has ever been made of Mount Pindus or of any part of it: there are wide discrepancies in the published notations of its altitudes; and although they are in some cases given with great nicety, they must always be received under reserve as mere approximations.

Pindus is the name of the most westerly of the three main spurs which branch off from the Balkan; starting from Tchardaugh, the nucleus of the Balkan, it forms the eastern boundary of North Albania, separates Thessaly from Epirus, traverses continental Greece, and terminates in Cape Colonna. Pindus is the general name of the chain, but every conspicuous height from end to end has a special designation: it would be tedious to particularise these eminences; suffice it to say that near the Epirus frontier the most conspicuous of them is Badzikaki, on the Greek frontier, 7760 feet high, and the most celebrated is Lakmon, above mentioned, 5550 feet. These heights are given as I have premised, under reserve. I have gone somewhat out of my way in stating these few particulars, for no part of Pindus proper is in Epirus; but a twin chain, if I may use the expression, of equal altitude runs parallel to it, which, beginning in Acarnania, ends in Mount Lingon in the angle between the Viossa and its confluent the Voudhomati ("ox-eye"). The Turco-Greek frontier cuts this chain at the Peak of Furka, 6300 feet high, thence it holds due north 25 miles in an unbroken ridge, when its continuity is abruptly cut short, and a remarkable isolated height arises, which forms a striking feature in the mountain scenery of Epirus: this height is called Djumerka; it gives its name to the surrounding district, and it acquires a shadow of classic interest from the attempt to identify it with the Tomarus of Dodona. Beyond Djumerka this secondary chain attains its greatest elevation in the Peak of Kakardhista; 15 miles from this is the Peak of Tzikureli, which is separated from the terminal ridge of Lingon by the valley of the Arta River (ancient Aracthus).

The part of Pindus above described and its twin chain, kept apart by the deep narrow valley of the Aspropotamus (ancient Achelous), are set upon the intersection of the plains of Thessaly and Epirus, thus forming a double ridge which, westward, descends in successive tiers to the Adriatic. There are four of these tiers. The first, separated from the parent chain by the valley of the Arta River, begins immediately to the north of Arta; closely compressing the river, its direction is nearly due north for 45 miles, as far as Janina, where, after a deep subsidence, it bends to the N.W., and after holding this course for 70 miles, it terminates in the double-headed Trebusin, from which, however, it is severed by the deep transversal gorge of Klisoura ("the key of the mountain"), a generic name in these parts for similar defiles. This chain has names varying with the districts through which it passes. Its southern extremity is called Kilberini. Midway between Arta and Janina a semi-detached eminence stands out, nearly parallel to and forming a pair with Djumerka; this eminence is called Xerovouno ("the dry mountain"), and, as well as its higher mate, is a conspicuous landmark in the country. After Xerovouno comes Tomaro, which farther on changes to Drysco ("the little oak"). Here it is that the mountain, as noticed, subsides. At the bend it rises again and forms the double-headed peak of Mitzekeli, which overlooks the lake and city of Janina. Ten miles farther on, the line is broken and disconnected for a distance of 15 miles; after which, the mountain re-forms in two lofty ridges which, loop-shaped, meet and terminate in Trebusin. Of these ridges, the eastern is called Nemertzika, the other Vradetta; they are truncated, as has been noticed, before their junction by the Viossa, which sweeping in its upper course along the inner base of Nemertzika, thus finds a passage to the sea. This passage is 9 miles in length; and that it is not waterworn, but of violent origin, is strongly suggested by the reciprocal conformity of the salient and re-entering angles which alternate on its rocky flanks.

Although my present task is geographical, I cannot here resist the temptation of noting the historic interest of this pass. It was the Fauces Antigoneia of the Romans, so called from the neighbouring stronghold of Antigonia, now the ruined fortress of Tepeleni. It was here that Philip the last King of Macedon, when engaged in war with the Romans 198 years B.C., succeeded for a whole season in keeping his formidable enemy at bay. He intrenched himself at the western entrance of the gorge: he might have defeated all the attacks of force; he was mastered by strategy. Titus Quinctus Flaminius, newly appointed to the command of the Romans, while amusing Philip with demonstrations in front, detached a strong force, which, ascending the course of the Suftinia, a confluent that falls into the Viossa below Tepeleni, got to the back of Mount Trebusin, gained the head of the valley which separates the two summits of that mountain, and, passing through the present villages of

Arza and Mezgorani, showed itself in Philip's rear. He was outgeneralled; nor was he able by flight or valour to retrieve his discomfiture or escape his pursuing foe. It has been my privilege, Livy in hand, to study the *Stena* of Klisoura, to mark its positions, to distinguish Mount Æropus on the right bank and Asnaus on the left, and after giving its place to each of the recorded incidents of Philip's defeat, to accompany the vanquished monarch in his precipitate flight, first up the right bank of the Viossa, then across into Vella (melotis), and by Lingon to that elevated position where for a few days he reposed amid "Juga summa, campos patentes, aquasque perennes." There is no difficulty in identifying this plain with the mountain plain, now called Politza, near Lakmon.

To return from this digression; the 2nd 3rd and 4th tiers of Pindus abut on the plain of Arta, where they nearly touch. There is a second junction at Suli, about 15 miles to the north; thence on they are distant for about 20 miles, but soon begin to lose their individuality, until at length they blend into an irregular group between the lower Viossa and the Adriatic, which group extends into Albania. About 10 miles due south of Janina, No. 2 attains its greatest elevation in the pinnacled height calted Olitzika, from which it throws out a sharp ridge, that inosculates with the first tier at the point well known to travellers by the name of St. Demetri, 12 miles S.E. of Janina, cut by the Kalamus at a place called Raïko; the chain thence takes the name of Djamousi, which it retains until its distinctness is lost.

The 3rd tier, emerging from the knot at Souli, under the name of Konila, flanks to the east, the valley of the Vuvo (Cocytus). N. of Paramythia it is severed by a deep ravine from the Peak of Labanitza, beyond which it mingles in the above-mentioned group.

The 4th tier is the maritime barrier of the country; it is not a continuous ridge, but is composed of a succession of fragments in irregular échelon, the remnants of mountain chains that were broken and partly engulfed in the course of those remote changes of which Geology informs us. Thanks to Her Majesty's hydrographers, we possess the most accurate and comprehensive information of this part of the mountain-system of Epirus. Their surveys take in a strip of the coast, 3 miles wide; and all the details are so clearly given that a glance at the chart would have more effect than pages of written description. According to these charts, the maritime fragments vary in height from 850 to 1900 feet: Kiepert assigns 7800 feet to the highest part of the Thessalian Pindus; of the intervening ridges no measurement, that I am aware of, has ever been attempted. The average distance between the crest lines of the several tiers is nearly as follows:—between Pindus proper and its twin range, 15 miles; between the twin range and the first tier, 28 miles; between the 1st and 2nd, 28 miles; the 2nd and 3rd, 16 miles; the 3rd and coast range, variable. The counterslope of the 1st and 2nd tiers is the steepest; both slopes of the third are nearly equal; in the coast fragments there is no uniformity in this respect.

Between these main chains there are in some places subordinate mountain formations of varying elevation, more or less detached, and more or less conformable in the line of direction; some of them have been mapped with specific names, but in general they are called after some neighbouring monastery, church or village.

The plains and valley plains descend in steps conformably to the mountains. The first of note is the Plain of Janina, the Hellopia of antiquity, which, situated between the first tier and one of its subordinates, is 20 miles in extreme length, 16 in greatest breadth, which is at the middle, whence it tapers to the extremities. The lateral inclination of this plain is from west to east; and in the angle between mounts Drysco and Mitzekeli lies a beautiful lake, whose blue waters add to the pictorial effect and relieve the stern character of the surrounding panorama. This lake merits a few remarks. It is supposed to be the Pambotis of antiquity; it is six miles long, 3 in greatest width at the S.E., diminishing to one at the N.W.; it receives no perennial stream, but is chiefly fed by the filtrations of Mitzekeli, which gush out beneath the water-mark; for the greater part of the year its waters are limpid and wholesome to drink; but in the fall they are polluted by decomposed vegeable matter, and by the droppings of water-fowl, which at that season frequent the lake in myriads. Along the edge, where the water is shallow, the papyrus grows in abundance and equisetaceæ; the former are much used for matting, the latter for huts, sheepfolds, and weirs. The fish of the lake are the eel, which attains an enormous size, the carp, pike, tench, perch, and a small fish called Dzimé, which is said to feed on the roe of the other kinds; it is delicate for the table, and is taken with silk nets, made expressly of fine tissue; water-snakes also abound in the lake.

Towards the S.W. end a rocky islet stands out of the waters, an outlier of Mitzekeli; though only ½ mile long by ⅓ mile across, it boasts of seven monasteries, and of a village of some 200 houses, inhabited by a thrifty population, which lives chiefly by fishing, ferrying, and wood-cutting. In one of the monasteries is pointed out the room in which, 48 years ago, the famous Ali

Pasha was mastered by treachery, and the floor is still perforated with the shots that were fired at him from underneath. Facing this islet a rocky promontory projects from the plain into the lake, its front and flanks having a perpendicular height of from 70 to 80 feet. On this promontory stands the citadel of Janina; and behind it the city, which is the capital of Epirus, spreads, fan-shaped, up the slope, until stopped by the low heights of St. George.

Through a narrow canal, partly natural, partly artificial, the waters of the Lake of Janina sluggishly flow into the smaller lake of Lapsista, 6 miles to the N.W. After heavy rains the intervening lands are sometimes flooded, so that the two lakes form but one sheet of water; on the other hand, in seasons of drought there is no communication between them. These lakes have no surface outlet, but the waters of Lake Lapsista flow into a cavity of chambered limestone, and after a passage of 5 miles under a mountain ridge they reappear in a deep gorge, through which they rush into the Kalamus near Raïko.

The plain next in order is that of the Drino; it is situated 20 miles from Janina between Mount Vradetta and the second tier, is 25 miles long, and 4 miles at the head, narrowing to a deep gorge at the confluence of the Drino with the Viossa, which is near Tepeleni at the west end of the Pass of Klisura. This valley plain, fertile in olives, barley, indian corn and tobacco, supports a number of villages which dot the lower levels of the flanking mountains, and are subordinate to Arghyrocastro (ancient Hadrianopolis), which, with its castellated fort, crowns some projecting roots of the western ridge. It is the focus of the Mussulman aristocracy of Epirus, and consists of a number of large, detached mansions which, even in decay, present an imposing appearance.

The only other noteworthy valley plains of the interior, are those of the Upper Louro, called Vathee, or "the deep," and of the Upper Viossa below Konitza (ancient Eriboa). Descending towards the sea, there is first the great Plain of Musakia, which stretches northwards from Avlona, 40 miles along the coast, and varies in width from 3 miles to 30 miles. This noble plain is abundantly watered in its southern part by the rivers Viossa, Beratino, and Skombi; and, being a formation of mingled alluvium, it possesses a fertility equal to any amount, and almost to every variety of production, being equally fit for agriculture and pasture, for the stock and botany of hot and cold climates.

Separated from Musakia by the Acroceraunian Mountains, is the Plain of Delvino which, lying within the coast range, is nearly circular in shape, with a diameter of about 16 miles, and is well-watered by the streams which unite to form the lake of Butrinto. Proceeding southwards, there are fine levels about the lower Kalamus. The valley of the Vuvo (Cocytus), contains the best soil in Epirus for tobacco; it reaches to the Phraï (Acheron), and the Acherusian marsh; and the mountains of Cassopæ separate it from the splendid lands of Lamari which, with the plain of Arta, form the southern part of Epirus. Lamari may be considered the western part of the plain of Arta, which would thus be 20 miles in length and 10 miles in greatest breadth; its soil is alluvial, and it is watered by the rivers Arta (Aracthus) and Louro (Charadrus), together with countless streamlets which issue from the roots of the mountains. Some of these streams, unable to gain an outlet, form permanent marshes in different parts of the plain; but everywhere else the land is of prime quality, yielding, among other products, barley, wheat, Indian corn, tobacco, rice, and flax, to which cotton may be added. The olive flourishes on the drier levels, and near the town of Arta the orange, lemon, and citron arrive at great perfection.

The plains Musakia and Arta, leaving out the valley plains above mentioned, may be considered a compensating provision for the mountain sterility of the interior.

RIVERS.

The rivers have already been incidentally mentioned. They are, beginning from the N., the Beratino (Apsus), the Viossa (Aous), the Kalamus (Thyamis), the Louro (Charadrus), and the Arta (Aracthus). The streams Pavla and Vistritsa, which form Lake Butrinto, are too inconsiderable to be classed as rivers, and the same may be said of the confluent streams, the Vuvo and Phraï, famed though they be as the Cocytus and Acheron of poetic fable.

Of these rivers the Beratino rises on the Macedonian Pindus, and after a winding course of about 100 miles, as the arrow flies, in a direction nearly due W., it falls into the Adriatic. The Viossa rises in Mount Lakmon, its course is N.W., its length about 100 miles, and its embouchure is only 15 miles S. of that of the Beratino; its chief tributaries are the Voudhomati, the Drino, and the Polyanthes, all flowing from the S. The Kalamus rises in Vella (ancient Melotis), its course is S.S.W., intersecting the line of the lower mountain tiers, from which it receives numerous tributaries; it approaches the sea by frequent sinuosities amongst the interfering heights, and it finishes its difficult course between Saïada and Gomenitza. The Louro springs from the roots of Xerovouno, and working round the S. base of Olitzika, it flows through the valley of

Vathee, enters the narrows of St. George, where it receives the copious spring that supplied water by means of an aqueduct to the Nicopolis of Augustus Cæsar; thence, after a rapid course of about 10 miles, it emerges into the plain of Arta, and skirting the base of the mountains, it falls into the Gulf of Arta, at the N.W. angle. Its direct length is about 35 miles. The Arta river has two sources, the one in Mount Lakmon, the other in the heights between Lingon and Mitzekeli; these meet at a place called Baldouni, whence they flow in a united stream between the twin Pindus and the first tier, and after 40 miles in a direction nearly due S., the river enters the plain of Arta, through which it meanders for 7 miles to the Gulf. In former times, this river disembogued at the foot of an isolated eminence, upon which are still to be seen the ruins of an ancient fort; but at some unknown date, repelled no doubt by an obstacle of its own making, it turned to the left at a sharp angle, and worked its present channel through the heavy alluvium.

None of the rivers of Epirus are navigable; in their upper courses they are mountain torrents or rapid streams; and in their passage through the low lands, they are obstructed by shallow and shifting mud-banks, while they are all blocked at the mouth by bars and deltas. They offer, however, great water power for industrial purposes, for irrigation, and, on the plains, for canals.

Of necessity there are several watersheds in Epirus; but the chief, and one of the most remarkable in Europe, is Mount Lakmon. From its pregnant flanks spring four classic rivers, namely the Peneus, the Haliacmon (in part), the Aous, and the Aracthus: I might almost add the Achelous, which has its source a few miles S. above the village of Khaliki (anciently Chalcis). The fountain heads of the Haliacmon (rather of its branch the Venetico), of the Aous, and of the Aracthus, almost meet on the plain of Politza, supplying the perennial waters mentioned by Livy, as already noticed.

LAKES.

Except the Lakes of Janina and Butrinto, there are none of any importance in Epirus. A small lake on the plain of Vella, forms one of the heads of the Kalamus. Close to the right bank of the Louro, about 4 miles above its issue into the plain of Arta, and about 50 feet above its level, there is a small rock-girt lake of great depth; and on the truncated tops of several of the highest mountains, there are deep perennial reservoirs, which are peopled only with newts (*Triton aquaticus*).

In the droughts of summer, these reservoirs are much resorted to by shepherds when the usual supplies of water fail.

CLIMATE.

A French writer, describing the climate of Epirus, has observed with terse propriety, that it is, "un abrégé de tous les climats." On the great plains of the N. and S. it is in pretty regular conformity with latitude, modified by the proximity of the sea on one side, and of mountains on the other; but in the interior it partakes of the character derived from high elevations and parallel chains of mountains. That character is more rigorous than the position of the country on the map would indicate, and ought, perhaps, to be classed as wintry. The winter actually, prevails with varying severity, from November to March inclusive. During this part of the year when it rains on the lower levels, it snows on the mountains; and this snow remains on the higher elevations until May. The greatest heat lasts from four to six weeks, and ranges between the middle of July and the middle of September; but even then, while the plains and sheltered valleys experience the full force of a southern sun, the mountain heights are fanned by cooling breezes and clothed, where there is soil, with unchanging verdure.

Of the climate of Janina a course of meteorological observations, extending over the last three years, enables me to speak with somewhat more of confidence. I should premise by noting that the observations have been made at an elevation of 1524 feet above sea level; that Janina is in latitude 39° 47′ N., longitude 21° 1′ E.; is 39 miles from the sea at the nearest point, is surrounded by high mountains, and is situated on the margin of an extensive lake which acts as a compensating medium on the temperature, moderating the extremes of summer's heat and winter's cold. To these natural conditions is to be added the fact that the plain and the surrounding mountains have in great part been denuded of trees. The process of denudation still goes on, and forms a number of centres in a continually widening circle. The covering of humus and soil on the mountain slopes being thus exposed to atmospheric action, has been gradually washed and worn away; so that in the place of expanses of forest, there is nothing now to be seen but bare surfaces of rock which hotly reflect the summer sun, and add to the intensity and duration of winter; while the rainfall that used to be retarded and economised in its descent by the spongelike soil and the interlacement of roots, now dashes down in a short-lived and unprofitable torrent.

These remarks seemed to me to be necessary as a preface to the subjoined figures, the deductions from which they will serve in some measure to regulate:—

BAROMETRIC MEANS.

Mean.	Highest.	Lowest.	Range.
28·400	28·614	28·131	0·483

The highest registered was on February 14, 1867	28,880
The lowest „ „ March 25, 1868	27,670
Extreme range	1,210

THERMOMETRIC MEANS IN SHADE.

Maximum.			Minimum.			
Mean.	Max.	Min.	Mean.	Max.	Min.	Range.
68·5	78·4	56·3	47·9	57·6	38·3	40·1

The maximum registered was, July 28, 1867	105·0
The minimum „ „ December 29, 1867	13·0
Extreme range	92·0

In January, 1864, the lake was frozen over, when for several successive days the thermometer fell at night as low as zero. This freezing of the lake is of rare occurrence; the only other *recorded* instances of it took place in 1607, 1687, 1812, and 1818.

The notes for rain give the following mean results:—

	Days.	Rain in Inches.
January	18·0	8·90
February	10·5	4·10
March	17·7	6·10
April	6·8	1·95
May	6·3	0·75
June	15·4	5·20
July	7·0	1·25
August	2·7	1·56
September	5·8	1·23
October	9·7	8·14
November	10·0	7·50
December	8·8	4·76
Annual	118·7	51·44

With respect to rain the climate is very capricious, and the seasons seem at times to change functions, being characterised at frequent returns by droughts and rains of extraordinary continuance.

The following is an extract from my note-book:—“March 16th, 1865, 1 P.M. Thunder and lightning, followed by heavy rain, which left a reddish deposit. Barometer, 27·850; thermometer, 54·0; wind, s., force, 1·5. Precisely the conditions of the atmosphere on the 28th March, 1864, when the same phenomenon occurred."

This deposit was found on examination to consist of particles of silica of all colours, scarcely waterworn, and were considered to be of volcanic origin. Such being the case, it may be asked whence were the particles wafted?

The annual mean of the wind is

N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Calm.	Force.
62	48	43	67	25	7	15	63	35	0·10

The prevailing winds, it will be seen, are northerly, the S.E. comes next; but from observing the direction of the clouds, it appeared that this wind is often the s. deflected from its course in its lower strata by the Pindic chain. The wind seldom blows hard at Janina, only twice in these last three years has the anemometer indicated 30 miles an hour, namely, on the 18th December, 1866, and on the 9th of January last. On both occasions the wind was from the N.E.

From the foregoing data some idea may be formed of the climate of inland Epirus. It is irregular, capricious, and marked by great extremes, nevertheless with common precautions it would be in the highest degree conducive to health and physical development; and if at any time there is an apparent deficiency in this respect, the cause is to be sought, not in natural specialities, but in the neglect of natural laws.

Epirus has been visited by earthquakes, but more lightly and less frequently in later than in former years. The focus of them seems to be the mountainous district hemmed in between the two main branches of the Beratino (Apsus). Mount Tomor is the culminating point of these mountains, and in October, 1851, its base was shaken by an earthquake which was violently repeated every day for a month, and for six months with lengthening intervals and decreasing force. Light shocks are occasionally felt in other parts of the province, and the undulations of the great earthquake at Cephalonia on the 4th of February, 1867, were very sensible in Janina.

FAUNA AND FLORA.

The fauna and flora of Epirus conform to the varieties of the climate, and to the lines of vertical distance. The coast plains exhibit the products of southern regions; whence ascending, nature gradually assumes a more northern aspect. Of the animal productions there are none peculiar to the country. The wild quadrupeds are the brown bear, wolf, fox, jackal, pig, deer of several varieties, and chamois; the smaller kinds include the hare, rabbit, otter, weasel, squirrel, &c. The Hanover rat has established itself in some of the coast towns, whence it has driven the native rat, which is smaller, less mischievous, cunning, and ferocious.

All the quadrupeds that have been domesticated in Western Europe are to be found in Epirus; buffaloes are bred on the lower plains, and the Molossian dog still retains his size and fierceness in his native mountains about Lingon and Lakmon. The horses, cows, and sheep are of small degenerate breeds, which is not owing to any defect of soil or climate. The horses of Epirus, on the contrary, were but a few years back highly prized throughout the Levant; and it is worthy of note that the plain of Musakia is considered the only place in European Turkey where the Arab horse can be bred without deterioration. The experiment was made about seventy years ago with perfect success. The horses of Musakia were long in great request; but, either from careless breeding or an exhaustive demand, this valuable race is now well nigh extinct.

Of the wild birds the chief are the eagle, the griffon, vulture, kite, tawny owl, the great horned owl, hawks of different kinds, the bustard, crane, and heron; in winter the wild goose resorts here, and many varieties of duck and waterfowl, woodcock, snipe, quail and partridge, invite the sportsman. Most of the tree, hedge, and field birds of England are common in the country, together with many of colder and of warmer climates. The white stork seems to claim a special notice. It is a migratory bird; it arrives about the 23rd of March, and leaves about the 23rd of August, and so regular are its periods that any considerable deviation from them is a sure prognostic of an abnormal season. It does man a service by destroying snakes, and it is revered by Mussulmans, who believe that it winters in the country about Mecca. For these reasons it is protected by law and religion, and in conscious security, and discernment as it were of its friends, it familiarly builds its nest near the dwellings of Mussulmans and within the precincts of their temples.

The domestic birds are the same as in England. The peacock is unknown in the country, and the Guinea-hen, lately introduced, is kept by a few as a rare and ornamental bird.

There are several varieties of the serpent kind; the largest being the marsh snake, which sometimes attains the length of 5 feet. Some of them are said to be venomous; but, thanks to the stork and their other enemies, their numbers are very much kept down.

Of the insect tribes there are none peculiar to the country; nor do they, so far as I can judge, present any great variety.

Of those that are useful to man I know only of the honey-bee, the silk moth and the kermes (*Coccus Ilicis*): no attempt is made to improve this last by artificial cultivation; it is found in only a few places, and it yields a rich violet crimson dye.

The vegetable productions partake of all the varieties of the soil and climate. The mountain heights, where the woodman's axe has not reached, are crowned with pine, oak, beech, and elm; the walnut, plane, chesnut, scyamore, and cypress, are common throughout the lower levels; the olive was introduced by the Venetians, and flourishes in the coast districts; and 20 years ago the mulberry was made a denizen of the country.

Of fruit-trees, the apple, pear, quince, pomegranate, fig, peach, apricot, cherry, plum, orange, lemon, and citron, are indigenous. The gardens about Parga are specially reserved for the large citron, which is used by the Jews in some of their religious feasts.

The physical character of the country being known, it would be superfluous to describe its botany; I would only mention that, among other useful plants, the liquorice, the hop, and the cotton-plant, grow wild in many parts of the province—the latter has been brought under cultivation; tobacco succeeds well even at elevations of 1600 feet; but the tobacco of Epirus is not highly esteemed in the markets of the East. Twelve years ago the potato was added to the vegetable products of the country; it succeeded perfectly well, and the cultivation of it continues to extend.

MINERALS.

As no geological survey has ever been made of Epirus the mineral resources of the country are almost wholly unknown. That they are considerable I am disposed to believe. Mount Lakmon is richly charged with iron-stone, beds of lignite have been found in the districts of Suli, Djumerka, and Avlona; kaolin in large quantities near Avlona, and salt-mines in Djumerka. At Selenitza, on the banks of the Viossa, 15 miles from Avlona, there are pitch-mines of great value, to which a scientific observer has assigned an approximate area of 4 square miles, with a depth varying from 50 to 100 feet; this is most likely under the mark, for the district of Paktos, 9 miles to the N., is also rich in bituminous matter; and it is presumable that the two places are comprised in one mineral field.

I must resist the temptation of including in this paper a sketch of the comparative geography of Epirus, and of the etymology of its ancient names: this would be entering a field of inquiry, which, though connected with the present subject, is of such variety and extent as to call for a separate dissertation; if I have occasionally touched on it in the course of the preceding observations, it was only to elucidate some passing question, or to confirm some uncertain identity. Archaic researches would, moreover, detract from my present object, which is to exhibit Epirus under its natural aspect with reference to physical resources and industrial capabilities. That aspect, it is true, has undergone some changes, and was in former ages modified by human industry, and by a civilisation of the elder times. But those early works of man were sacrificed to the terrible vengeance of an exasperated master. Epirus has never recovered from the desolating chastisement inflicted upon it by Æmilius Paullus, 167 years B.C.; and at this day the country, with its fine climate, its varied resources and commanding position, is appealing to man to recommence the work of scientific industry and progressive improvement.

I shall conclude by observing that Epirus is inhabited by a heterogeneous population of about 350,000 souls, of whom the greater part live by husbandry of a primitive fashion, and are dispersed in villages and hamlets to the number collectively of 1600 and more. For the non-agricultural part of the population there are Janina, the capital, and some 15 or 20 small towns of moderate pretensions.

Yanina, January 19, 1869.

XIII.—*Notes of a Journey up the River Juruá.*

By W. CHANDLESS, Gold Medallist, R.G.S.

THE journey, unsuccessful in its main object, of which the following notes are offered, was made during the last five months of 1867.

Though furnished with recommendations from the Government at Manáos to the local authorities of Teffé, which was my starting point, I had the greatest difficulty in obtaining a crew even for one canoe; in fact, as one of the men I counted on failed me at the last moment, I could not have started but for the kindness of S^r^ João da Cunha Correia (himself an explorer of the Juruá), who to complete my crew sent with me a slave of his—a man very useful on the lower part of the river, as he knew that, and the Indians on it, but in the crisis of the journey as bad a man as I could have had with me. Mine was Hobson's choice, or I would not have taken a slave.

The river Juruá is at least one-third smaller than the Purûs, but in other respects so similar that a very short description of its general character will suffice. Its water is "white," or